

We Claim:

1. A carboxypeptidase CPG2 enzyme in which an immunogenic region selected from:

KIKGRGGK (amino acids 98-105, SEQ ID NO:1)

KEYGVRD (157-163, SEQ ID NO:2), preferably YGVRD (159-163)

KLADY (191-195, SEQ ID NO:3)

GAGK (412-C-terminal(415), SEQ ID NO:4),

AG (413-414), and

EGGKKLVDK (331-338, SEQ ID NO:5)

is modified to reduce or alter immunogenicity to a mammalian immune system whilst retaining CPG2 activity.

2. A carboxypeptidase CPG2 enzyme wherein the C-terminus of the enzyme comprises an extension selected from a histidine tag, a myc tag, and a myc-his tag.

3. A fusion protein comprising an antibody fused to the carboxypeptidase enzyme of claim 1 or 2.

4. The fusion protein of claim 3 wherein said antibody is an anti-CEA antibody.

5. The fusion protein of claim 4 wherein said anti-CEA antibody is MFE23.

6. A method of preparing a fusion protein comprising a carboxypeptidase CPG2 enzyme wherein the C-terminus of the enzyme comprises an extension selected from a histidine tag, a myc tag, and a myc-his tag, said method comprising expressing a DNA sequence encoding said fusion operably linked to a promoter in a *Pichia pastoris* host cell, and recovering said fusion protein therefrom.

7. The method of claim 6 wherein said fusion protein comprises an antibody.
8. The method of claim 7 wherein said antibody is an anti-CEA antibody.
9. The method of claim 8 wherein said antibody is MFE23.
10. A nucleic acid sequence encoding the enzyme of claim 1.
11. A nucleic acid sequence encoding the enzyme of claim 2.
12. A nucleic acid sequence encoding the enzyme of claim 3.
13. A nucleic acid sequence encoding the enzyme of claim 4.
14. A nucleic acid sequence encoding the enzyme of claim 5.
15. A kit comprising a first component which is a prodrug which can be converted to a cytotoxic drug by carboxypeptidase; and a second component selected from
  - i) the fusion protein of claim 3;
  - ii) a fusion protein comprising a ligand specific for a cellular antigen and the enzyme of claim 1; and
  - iii) a vector comprising the nucleic acid sequence of claim 1 operably linked to a promoter.